

Part 431, unless it has submitted a Compliance Certification to DOE according to the provisions under 10 CFR 431.36, that the basic model meets the requirements of the applicable standard. This collection of information ensures compliance with the energy efficiency for certain commercial and industrial electric motors. (5) Estimated Number of Respondents: 84. (6) Estimated Total Burden Hours: 25,200 total hours requested (approximately 300 hours per manufacturer or private labeler). (7) Number of Collections: The package contains one information and recordkeeping requirement.

Comments are invited on: (a) Whether the information collections are necessary for the proper performance of the functions of the DOE, including whether the information has practical utility; (b) the accuracy of the DOE's estimate of the burden of the information collections, including the validity of the methodology and assumptions used; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the information collections on respondents, including through the use of automated collection techniques or other forms of information technology.

Comments submitted in response to this notice will be summarized and included in the request for OMB review and approval of these information collections. The comments will also become a matter of public record.

**Statutory Authority:** Section 3507(h)(1) of the Paperwork Reduction Act of 1995 (Pub. L. 104-13, 44 U.S.C. Chapter 35).

Issued in Washington, DC on September 4, 2007.

**Alexander A. Karsner,**

*Assistant Secretary, Energy Efficiency and Renewable Energy.*

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## DEPARTMENT OF ENERGY

### Office of Energy Efficiency and Renewable Energy

[Docket No. EERE-2007-BT-WAV-0006]

#### Energy Conservation Program for Consumer Products: Publication of the Petition for Waiver From Daikin U.S. Corporation and Granting of the Application for Interim Waiver From the Department of Energy Residential Central Air Conditioner and Heat Pump Test Procedure [Case No. CAC-016]

**AGENCY:** Office of Energy Efficiency and Renewable Energy, Department of Energy.

**ACTION:** Notice of petition for waiver, granting of application for interim waiver, and request for comments.

**SUMMARY:** This notice announces receipt of and publishes a Petition for Waiver from Daikin U.S. Corporation (Daikin). The Petition for Waiver (hereafter "Daikin Petition") requests a waiver of the Department of Energy (DOE) test procedures applicable to residential central air conditioners and heat pumps. The waiver request is specific to the Daikin Variable Refrigerant Volume VRV-II-S (residential) multi-split heat pumps and heat recovery systems. Through this document, DOE is: (1) Soliciting comments, data, and information with respect to the Daikin Petition; and (2) granting an Interim Waiver to Daikin from the DOE test procedure for residential central air conditioners and heat pumps.

**DATES:** DOE will accept comments, data, and information with respect to the Daikin Petition until, but no later than October 18, 2007.

**ADDRESSES:** You may submit comments, identified by case number [CAC-016], by any of the following methods:

- *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.

- *E-mail:*

*Michael.Raymond@ee.doe.gov* Include either the case number [CAC-016], and/or "Daikin Petition" in the subject line of the message.

- *Mail:* Ms. Brenda Edwards-Jones, U.S. Department of Energy, Building Technologies Program, Mailstop EE-2J, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-2945. Please submit one signed original paper copy.

- *Hand Delivery/Courier:* Ms. Brenda Edwards-Jones, U.S. Department of Energy, Building Technologies Program, Room 1J-018, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Please submit one signed original paper copy.

**Instructions:** All submissions received must include the agency name and case number for this proceeding. Submit electronic comments in WordPerfect, Microsoft Word, Portable Document Format (PDF), or text (American Standard Code for Information Interchange (ASCII)) file format, and avoid the use of special characters or any form of encryption. Wherever possible, include the electronic signature of the author. Absent an electronic signature, comments submitted electronically must be followed and authenticated by submitting the signed original paper

document. DOE does not accept telefacsimiles (faxes).

Any person submitting written comments must also send a copy of such comments to the petitioner, pursuant to 10 CFR 430.27(d). The contact information for the petitioner is: Mr. Russell Tavalacci, Director of Product Marketing, Daikin U.S. Corporation, 1645 Wallace Drive, Suite 110, Carrollton, TX 75006. Telephone: (972) 245-1510. E-mail:

*Russell.Tavalacci@daikinac.com.*<sup>1</sup>

According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit two copies: one copy of the document including all the information believed to be confidential, and one copy of the document with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

**Docket:** For access to the docket to review the documents relevant to this matter, you may visit the U.S. Department of Energy, Forrestal Building, Room 1J-018 (Resource Room of the Building Technologies Program), 1000 Independence Avenue, SW., Washington, DC, (202) 586-2945, between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. Available documents include the following items: (1) This notice; (2) public comments received; (3) the Petition for Waiver and Application for Interim Waiver; and (4) prior DOE rulemakings regarding central air conditioners and heat pumps. Please call Ms. Brenda Edwards-Jones at the above telephone number for additional information regarding visiting the Resource Room. Please note that DOE's Freedom of Information Reading Room (Room 1E-190 at the Forrestal Building) is no longer housing rulemaking materials.

**FOR FURTHER INFORMATION CONTACT:** Dr. Michael G. Raymond, U.S. Department of Energy, Building Technologies Program, Mail Stop EE-2J, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-9611. E-mail: *Michael.Raymond@ee.doe.gov*.

Francine Pinto or Eric Stas, U.S. Department of Energy, Office of the

<sup>1</sup> DOE notes that Daikin has updated the contact information provided in its initial petition. Accordingly, the information provided in the **ADDRESSES** section above should be used in lieu of the Daikin contact information cited in the company's original Petition for Waiver and Application for Interim Waiver (published following this notice).

General Counsel, Mail Stop GC-72, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585-0103. Telephone: (202) 586-9507. E-mail: *Francine.Pinto@hq.doe.gov* or *Eric.Stas@hq.doe.gov*.

#### SUPPLEMENTARY INFORMATION:

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#### I. Background and Authority

Title III of the Energy Policy and Conservation Act (EPCA) sets forth a variety of provisions concerning energy efficiency. Part B of Title III establishes the "Energy Conservation Program for Consumer Products Other Than Automobiles." (42 U.S.C. 6291-6309) This notice involves residential products under Part B, and the statute specifically includes definitions, test procedures, labeling provisions, energy conservation standards, and the authority to require information and reports from manufacturers.

With respect to test procedures, Part B generally authorizes the Secretary of Energy (the Secretary) to prescribe test procedures that are reasonably designed to produce results which reflect energy efficiency, energy use, and estimated annual operating costs, and that are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

Relevant to the current Petition for Waiver, the test procedures for residential central air conditioners and central air conditioning heat pumps are set forth in 10 CFR Part 430, Subpart B, Appendix M. Section 323 of EPCA provides that the Secretary of Energy may amend test procedures for consumer products if the Secretary determines that amended test procedures would more accurately reflect energy efficiency, energy use or estimated annual operating costs, and are not unduly burdensome to conduct. (42 U.S.C. 6293(b)(1)(A) and (b)(3))

DOE's regulations contain provisions allowing a person to seek a waiver from the test procedure requirements for covered products, for which the petitioner's basic model contains one or more design characteristics that prevent testing according to the prescribed test procedures, or when the prescribed test procedures may evaluate the basic model in a manner so unrepresentative of its true energy consumption as to provide materially inaccurate comparative data. 10 CFR 430.27(a)(1). Petitioners must include in their petition any alternate test procedures

known to evaluate the basic model in a manner representative of its energy consumption. 10 CFR 430.27(b)(1)(iii). The Assistant Secretary for Energy Efficiency and Renewable Energy (the Assistant Secretary) may grant the waiver subject to conditions, including adherence to alternate test procedures. 10 CFR 430.27(l). Waivers generally remain in effect until final test procedure amendments become effective, thereby resolving the problem that instigated the Petition for Waiver. 10 CFR 430.27(m).

The waiver process also permits parties petitioning DOE for a waiver to apply for an Interim Waiver from the prescribed test procedure requirements. 10 CFR 430.27(a)(2). The Assistant Secretary will grant an Interim Waiver request if it is determined that the applicant will experience economic hardship if the Interim Waiver is denied, if it appears likely that the Petition for Waiver will be granted, and/or the Assistant Secretary determines that it would be desirable for public policy reasons to grant immediate relief pending a determination on the Petition for Waiver. 10 CFR 430.27(g). An Interim Waiver remains in effect for a period of 180 days or until DOE issues its determination on the Petition for Waiver, whichever is sooner, and may be extended for an additional 180 days, if necessary. 10 CFR 430.27(h).

#### II. Petition for Waiver

On December 9, 2005, Daikin filed a Petition for Waiver from the test procedures applicable to residential and commercial package air conditioning and heating equipment and an Application for Interim Waiver. The applicable test procedure for Daikin's residential VRV-II-S products is the DOE residential test procedure found in 10 CFR Part 430, Subpart B, Appendix M. For Daikin's commercial VRV-II-S products, the applicable test procedure is also the residential test procedure found in Appendix M, because the same test is used for single-phase products with capacities less than 65,000 Btu/h.

Daikin seeks a waiver from the DOE test procedures on the grounds that the VRV-II-S Series multi-split heat pump and heat recovery systems contain design characteristics that prevent testing according to the current DOE test procedures. Specifically, Daikin asserts that the two primary factors that prevent testing of multi-split variable speed products, regardless of manufacturer, are the same factors stated in the waiver that DOE granted to Mitsubishi Electric & Electronics USA, Inc. (Mitsubishi) for a similar line of commercial multi-splits:

- Testing laboratories cannot test products with so many indoor units.
- There are too many possible combinations of indoor and outdoor units to test. 69 FR 52660, 52661 (August 27, 2004).

Further, Daikin states that although the VRV-II-S product line fits within the scope of the applicable DOE residential test procedure, the basic design is not commensurate with the intent of the test procedures for the reasons that follow. In particular, the test procedure does not provide for:

- The test procedure for a split system requires testing a combination of paired indoor and outdoor unit assemblies, but it does not include provisions for how the Daikin VRV-II-S product, with its thousands of indoor unit combinations, should be evaluated with just one outdoor unit test.

- The test procedure requires testing matched assemblies, but the Daikin VRV-II-S product is designed to be used in zoned systems where the capacity of the indoor units installed does not necessarily match the capacity of the outdoor unit.

- The Daikin VRV-II-S products are intended to be used in zoned systems where an outdoor unit can be connected with up to nine separated indoor units. Moreover, Daikin offers 83 indoor unit models. Each indoor unit is designed to be used with up to eight other indoor units, which may not be the same models, in combination with a single outdoor unit. Consequently, for each VRV-II-S outdoor unit, there could be thousands of possible combinations of indoor units that could be matched in a system configuration.

Accordingly, Daikin requests that DOE grant a test procedure waiver for its VRV-II-S product designs, until a suitable test method can be prescribed. Furthermore, Daikin states that failure to grant the waiver would result in economic hardship because it would prevent the company from marketing its VRV-II-S products. Also, Daikin states that it is willing to work closely with DOE, the Air-Conditioning and Refrigeration Institute (ARI), and other agencies to develop appropriate test procedures, as necessary.

#### III. Application for Interim Waiver

On December 9, 2005, in addition to its Petition for Waiver, Daikin submitted to DOE an Application for Interim Waiver. Daikin's Application for Interim Waiver does not provide sufficient information to evaluate the level of economic hardship Daikin will likely experience if its Application for Interim Waiver is denied. However, in those instances where the likely success of the

Petition for Waiver has been demonstrated, based upon DOE having granted a waiver for a similar product design, it is in the public interest to have similar products tested and rated for energy consumption on a comparable basis. DOE has previously granted Interim Waivers to Fujitsu and Samsung for comparable residential and commercial multi-split air conditioners and heat pumps. 70 FR 5980 (Feb. 4, 2005); 70 FR 9629 (Feb. 28, 2005), respectively. In addition, as noted above, DOE approved the Petition for Waiver from Mitsubishi for its comparable line of commercial multi-split air conditioners and heat pumps. 69 FR 52660 (August 27, 2004). The two prevailing reasons for granting these waivers also apply to Daikin's VRV-II-S products: (1) Test laboratories cannot test products with so many indoor units<sup>2</sup>; and (2) it is impractical to test so many combinations of indoor units with each outdoor unit. Thus, DOE has determined that it is likely that Daikin's Petition for Waiver will be granted for its new VRV-II-S multi-split models. Hence, *It is ordered that:*

The Application for Interim Waiver filed by Daikin is hereby granted for Daikin's VRV-II-S multi-split central air conditioners and central air conditioning heat pumps, subject to the specifications and conditions below. The Interim Waiver applies to the following models:

1. Daikin shall not be required to test or rate its VRV-II-S residential products on the basis of the currently applicable test procedure, which is set forth in 10 CFR Part 430, Subpart B, Appendix M; and
2. Daikin shall be required to test and rate its VRV-II-S products according to the alternate test procedure as set forth in section IV(3), "Alternate test procedure."

#### *Outdoor Units, Heat Pump-type*

- RXYM4MVMT: 38,200 Btu/h cooling/ 42,600 Btu/h heating, single phase, 220 volts, 60 Hz
- RXYM5MVMT: 47,700 Btu/h cooling/ 54,600 Btu/h heating, single phase, 220 volts, 60 Hz
- RXYM6MVMT: 52,900 Btu/h cooling/ 61,400 Btu/h heating, single phase, 220 volts, 60 Hz

#### *Indoor units*

- FXC series, ceiling mounted cassette (double flow) type, FXC 20/25/32/40/50/63/80/125

- FFX series, ceiling mounted cassette (multi flow) type, FFX 25/32/40/50/63/80/100/125
- FXK series, ceiling mounted cassette (corner) type, FXK 25/32/40/63
- FXD series, slim above ceiling mounted ducted type, FXD 20/25/32/40/50/63
- FXYD series, low silhouette above ceiling mounted ducted type, FXYD 20/25/32/40/50/63
- FXS series, built-in above ceiling mounted ducted type, FXS 20/25/32/40/50/63/80/100/125
- FXM series, above ceiling mounted ducted type, FXM 40/50/63/80/100/125
- FXH series, ceiling suspended type, FXH 32/63/100
- FXA series, wall mounted type, FXA 20/25/32/40/50/63
- FXL series, floor standing console type, FXL 20/25/32/40/50/63
- FXN series, floor standing concealed type, FXN 20/25/32/40/50/63

This Interim Waiver is conditioned upon the presumed validity of statements, representations, and documentary materials provided by the petitioner. This Interim Waiver may be revoked or modified at any time upon a determination that the factual basis underlying the Petition for Waiver is incorrect, or DOE determines that the results from the alternate test procedure are unrepresentative of the basic models' true energy consumption characteristics.

#### **IV. Alternate Test Procedure**

In response to two recent Petitions for Waiver from Mitsubishi, DOE specified an alternate test procedure to provide a basis from which Mitsubishi could test and make valid energy efficiency representations for its R410A CITY MULTI products, as well as for its R22 multi-split products. The Mitsubishi petitions, including the alternate test procedure, were published in the **Federal Register** on April 9, 2007. 72 FR 17528, 17532. For similar reasons, DOE believes that alternate test procedures are necessary here.

In general, DOE understands that existing testing facilities have a limited ability to test multiple indoor units at one time, and the number of possible combinations of indoor and outdoor units for some variable refrigerant flow zoned systems is impractical to test. We further note that subsequent to the waiver that DOE granted for Mitsubishi's R22 multi-split products, ARI formed a committee to discuss this issue and to work on developing an appropriate testing protocol for variable refrigerant flow systems. However, to date, no additional test methodologies

have been adopted by the committee or submitted to DOE.

Therefore, as discussed below, DOE is including an alternate test procedure as a condition in granting the Interim Waiver for Daikin's products, and plans to consider the same alternate test procedure in the context of the subsequent Decision and Order pertaining to Daikin's Petition for Waiver. Utilization of this alternative test procedure will allow Daikin to test and make energy efficiency representations for its VRV-II-S products. More broadly, DOE is also considering applying a similar alternate test procedure to other existing waivers for similar residential and commercial central air conditioners and heat pumps. Such cases include Samsung's Petition for Waiver for its multi-split products at 70 FR 9629 (Feb. 28, 2005), and Fujitsu's Petition for Waiver for its multi-split products at 70 FR 5980 (Feb. 4, 2005). Similarly, DOE is considering use of this alternate test procedure for other products of this type for which manufacturers seek waivers, until such time as the DOE test procedure has been updated appropriately.

In the present case, DOE is modifying the alternate test procedure in the above-referenced waiver granted to Mitsubishi for the R410A CITY MULTI products, and plans to consider inclusion of the following similar waiver language in the Decision and Order for Daikin's VRV-II-S multi-split air conditioner and heat pump models:

(1) The "Petition for Waiver" filed by Daikin U.S. Corporation (Daikin) is hereby granted as set forth in the paragraphs below.

(2) Daikin shall not be required to test or rate its variable refrigerant volume multi-split air conditioner and heat pump products listed in section III, above, on the basis of the currently applicable test procedure, but shall be required to test and rate such products according to the alternate test procedure as set forth in paragraph (3).

(3) *Alternate test procedure.*

(A) Daikin shall be required to test the products listed above according to the test procedures for central air conditioners and heat pumps prescribed by DOE at 10 CFR part 430, except that:

(i) Daikin shall not be required to comply with: The first sentence in 10 CFR 430.24(m)(2), which refers to "that combination manufactured by the condensing unit manufacturer likely to have the largest volume of retail sales;" and the third sentence in 10 CFR 430(m)(2), including the provisions of 10 CFR 430(m)(2)(i) and (ii). Instead of testing the combinations likely to have the highest volume of retail sales,

<sup>2</sup> According to the Daikin petition, up to 17 indoor units are possible candidates for testing of its commercial multi-split air conditioners and heat pumps. However, DOE believes that the practical limits for testing would be about five units.

Daikin may test a "tested combination" selected in accordance with the provisions of subparagraph (B) of this paragraph. Additionally, instead of following the provisions of 10 CFR 430(m)(2)(i) and (ii) for every other system combination using the same outdoor unit as the tested combination, Daikin shall make representations concerning the VRV-II-S products covered in this waiver according to the provisions of subparagraph (C) below.

(ii) Daikin shall be required to comply with 10 CFR 430 Appendix M as amended in accordance with designated changes that are listed in the July 20, 2006 **Federal Register** notice. 71 FR 41320. These designated changes are with respect to the following test procedure sections: 2.1, 2.2.3, 2.4.1, 3.2.4 (including Table 6), 3.6.4 (including Table 12), 4.1.4.2, and 4.2.4.2.

(B) *Tested combination.* The term "tested combination" means a sample basic model comprised of units that are production units, or are representative of production units, of the basic model being tested. For the purposes of this waiver, the tested combination shall have the following features:

(i) The basic model of a variable refrigerant volume system used as a tested combination shall consist of an outdoor unit that is matched with between two and five indoor units.

(ii) The indoor units shall:

(a) Represent the highest sales volume type models;

(b) Together, have a capacity between 95 percent and 105 percent of the capacity of the outdoor unit;

(c) Not, individually, have a capacity greater than 50 percent of the capacity of the outdoor unit;

(d) Have a fan speed that is consistent with the manufacturer's specifications; and

(e) All have the same external static pressure.

(C) *Representations.* Daikin may make representations about the energy efficiency of its variable refrigerant volume multi-split air conditioner and heat pump products, for compliance, marketing, or other purposes, only to the extent that such representations are made consistent with the provisions outlined below:

(i) For multi-split combinations tested in accordance with this paragraph, Daikin may make representations based on these test results.

(ii) For multi-split combinations that are not tested, Daikin may make representations which are based on the testing results for the tested combination and which are consistent with either of the two following

methods, except that only method (a) may be used, if available:

(a) Representation of non-tested combinations according to an alternative rating method approved by DOE; or

(b) Representation of non-tested combinations at the same energy efficiency level as the tested combination with the same outdoor unit.

## V. Summary and Request for Comments

Through today's notice, DOE announces receipt of Daikin's Petition for Waiver from the test procedures applicable to Daikin's VRV-II-S multi-split air conditioner and heat pump products, and for the reasons articulated above, DOE is granting Daikin an Interim Waiver from those procedures. As part of this notice, DOE is publishing Daikin's Petition for Waiver in its entirety. The Petition contains no confidential information. Furthermore, today's notice includes an alternate test procedure that Daikin is required to follow as a condition of the Interim Waiver and which DOE is considering including in its subsequent Decision and Order. In this alternate test procedure, DOE is defining a "tested combination" which Daikin could use in lieu of testing all retail combinations of its VRV-II-S multi-split air conditioner and heat pump products.

Furthermore, should a subsequent manufacturer be unable to test all retail combinations, DOE is considering allowing such manufacturers to rate waived products according to an alternate rating method approved by DOE, or to rate waived products the same as that for the specified tested combination. DOE is also considering applying a similar alternate test procedure to other comparable Petitions for Waiver for residential and commercial central air conditioners and heat pumps. Such cases include Samsung's Petition for Waiver for its DVM products at 70 FR 9629 (Feb. 28, 2005), and Fujitsu's Petition for Waiver for its Airstage variable refrigerant flow products at 70 FR 5980 (Feb. 4, 2005).

DOE is interested in receiving comments on the issues addressed in this notice. Pursuant to 10 CFR 430.27(d), any person submitting written comments must also send a copy of such comments to the petitioner, whose contact information is included in the **ADDRESSES** section above.

Issued in Washington, DC, on September 4, 2007.

**Alexander A. Karsner,**

*Assistant Secretary, Energy Efficiency and Renewable Energy.*

December 13, 2005

Hon. Douglas Faulkner, Acting Assistant Secretary for Energy Efficiency and Renewable Energy, Department of Energy  
1000 Independence Ave., SW.,  
Washington, DC.

Re: Petition for Waiver of Test Procedures and Application for Interim Waiver for Daikin's "VRV-II-S" variable refrigerant volume multi-split heat pumps

Dear Assistant Secretary Faulkner: Daikin U.S. Corporation (DUS) respectfully submits this document as our Petition for Waiver of Test Procedure and Application for Interim Waiver of Test Procedure applicable to our VRV-II-S product offering to the Department of Energy (DOE) for review and approval. This petition is submitted pursuant to the provisions of 10 CFR 431.29 on the grounds that the basic models addressed herein contain design characteristics which prevent testing according to prescribed procedures. This petition is being requested specifically for Daikin's VRV-II-S multi-split heat pump system incorporating variable speed compressor technology, variable refrigerant flow and multiple zoning capabilities.

There are two primary factors that prevent the testing of multi-split variable speed product regardless of manufacturer which are:

- Testing laboratories cannot test products with so many indoor units.
- There are too many possible combinations of indoor and outdoor units to test.

The existing test standard that most closely relates to such product is ARI 210/240 (2003).

### I. Background

Daikin Industries Limited is a leading manufacturer of variable speed and Variable Refrigerant Volume (VRV) zoning systems which are offered for sale by DUS in the North American market. These products combine advanced technologies such as high efficiency variable speed compressors and fan motors along with electronic expansion valves and other devices to insure peak operating performance of the overall system. The systems are applied in both commercial and residential applications whereas zoning is applied to provide users with peak utility of the system and energy savings. The capacity of this DUS product offering ranges from 38,200 BTU/Hr to 52,900 BTU/Hr.

Our product offering (VRV-II-S) shares many of the same design and characteristic features as that of the City Multi product manufactured and distributed by Mitsubishi Electric and Electronics USA, Inc. (MEUS), of which DOE has granted a waiver as described in the Federal Register/Vol. 69, No. 166/ Friday, August 27, 2004/Notices, page 52,660. DOE granted MEUS' petition for waiver on the basis that (1) testing laboratories cannot test products with so many indoor units, and (2) there are too many possible combinations of indoor and

outdoor units to test, therefore preventing testing of the basic models according to prescribed test procedures. The VRV-II-S also shares many of the same design characteristics as that of the DVM product offered by Samsung Air Conditioning, of which DOE granted an interim waiver on February 28, 2005.

An additional problem that prevents testing is the wide variety of indoor unit static pressure ratings available with these and other multi-split products. Testing facilities cannot effectively control multiple indoor static pressures that would be required with many of the indoor unit combinations available. To accomplish such testing a large number of test rooms would need to be utilized simultaneously, networked with data recording instrumentation and extensive piping configurations would need to be routed throughout the various test rooms. Obviously this process would be cost and time prohibitive.

Daikin's VRV-II-S product offering consists of multiple indoor units being connected to an outdoor unit. Indoor units for these products are available in Ducted (with many different indoor static pressure ratings as standard), 4-Way Cassette, Wall Mounted, Ceiling Suspended, Floor Standing and other models. There are thousands of possible combinations with this current product offering.

## II. Design Characteristics

Daikin developed the "VRV-II-S" to respond to the needs of a truly energy efficient, easy to design and install air conditioning system that is also flexible, reliable and user friendly and capable to provide real zoning to residences, small offices and shops. Daikin has incorporated comprehensive cutting-edge technologies into the "VRV-II-S," and the results are quieter operation, smaller units, and simpler maintenance with higher efficiencies.

These compact 38,200 (4 HP); 47,700 (5 HP) and 52,900 (6 HP) BTU/h Variable Refrigerant Volume (VRV) multi-split systems consist of one outdoor unit, using a Reluctance DC scroll compressor with a sine wave DC inverter with truly variable refrigerant volume capacity serving multiple indoor units through a single piping set of gas and liquid lines and using headers or 'Refnets' for refrigerant distribution and electronic expansion valves.

The "VRV-II-S" system enables a single outdoor unit to connect with up to 6 indoor units for the 4HP model; with up to 8 indoor units for the 5 HP model and with up to 9 indoor units for the 6 HP model.

The indoor units can be selected from 13 types with 83 models (included in item IV of this application), giving these systems thousands of possible installation combinations. The operation control system allows each indoor unit to have different set temperatures and different modes of operation.

The Reluctance DC scroll compressor and the sine wave inverter maintain compressor operation at optimum performance allowing it to precisely match the cooling or heating load demand of the conditioned areas. The Reluctance DC scroll compressor is capable

of slowing down to an operating capacity as little as 30% of its rated capacity and accelerating to up to 150% of its rated capacity allowing it to install up to 130% indoor unit capacity to the outdoor unit capacity.

## Grounds for the Petition

Daikin seeks a waiver from the test procedures applicable to central air conditioners and heat pumps under Title III of the Energy Policy and Conservation Act (EPCA), Part B of Title III (42 U.S.C. 6291-6309) Energy Conservation Program for Consumer Products other than Automobiles and 10 CFR 430 Energy Conservation Program for Consumer Products and Part C of Title III (42 U.S.C. 6311-6317) Energy Efficiency of Industrial Equipment and 10 CFR 431 Energy Efficiency Program for Certain Commercial and Industrial Equipment.

In particular, Daikin seeks a waiver from the currently applicable test procedure provided in 10 CFR 430.23(m) central air conditioners and heat pumps and 10 CFR 430, Appendix M to Subpart B Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps.

## III. Specific Requirements Sought to be Waived and the Need for the Waiver

Daikin seeks a waiver from the applicable test procedures for "VRV-II-S," because the current test procedures would evaluate "VRV-II-S" in a manner completely unrepresentative of its true energy consumption as to provide materially inaccurate competitive data. Below are the details of the two main reasons:

(1) Specified test procedures for a split system call for testing a combination of paired indoor and outdoor unit assemblies for typical split systems to be tested together, but it does not include provisions on how the "VRV-II-S" with thousands of indoor unit combinations is to be evaluated with just one outdoor unit test.

Test procedures for typical multi-split central air conditioning and heat pump systems (a combination of one outdoor unit and up to five indoor units) calls for all the indoor units operating at full capacity. This type of test, even though limited, can be impractical for these types of products since it is possible to match a defined standard combination of indoor units to one outdoor unit. "VRV-II-S" does not have a standard representative combination of outdoor and indoor units for testing.

"VRV-II-S" products are intended to be used in zoning systems where an outdoor unit can be connected from up to 9 separated indoor units in a zoned system. Moreover, we offer 83 indoor unit models. Each of these indoor unit models is designed to be used together with up to 8 other indoor units, which may not be the same models, in combination with a single outdoor unit. In other words, for each "VRV-II-S" outdoor unit there are thousands of possible combinations of indoor units that can be matched in a system configuration.

The current test procedure provides no direction for determining what combinations of outdoor unit and indoor units shall be

tested for a variable refrigerant volume system. While a test procedure using a given number of indoor units (4, 5, 6 or more) whose total capacity matches that of the outdoor unit may be considered, the results will not entirely represent the system's true energy consumption characteristics. Because such a test procedure sets a condition to the ratings based on one test combination among thousands of possible combinations, they do not represent all system combinations and consumers may misread true energy consumption if their system configuration differs from the tested configuration.

At the same time, it will be unduly burdensome for us to conduct tests of each possible combination and extremely impracticable. Therefore, the test procedure does not contemplate, and cannot practically be applied to Daikin's "VRV-II-S" consisting of multiple assemblies that are intended to be used in a very large number of different combinations.

(2) The test procedure calls for testing 'matched assemblies,' but "VRV-II-S" is designed to be used in zoning systems where the capacity of the indoor units installed does not necessarily match the capacity of the outdoor unit. In a typical split system the indoor and outdoor units are balanced and the capacity of the outdoor unit is equivalent to the capacity of the indoor unit. However, with "VRV-II-S" the sum of the capacity of the indoor units can be from 50% to 130% of the capacity of the outdoor unit. Such imbalanced combination of indoor units and outdoor units are possible because of the zoning and electronic controls characteristics of the system. For example, the use of electronic controls, electronic expansion valves and inverter driven scroll compressors allow the system to precisely control the volume of refrigerant needed in each of the indoor units in accordance with the particular load and set points of that indoor unit. This is possible because of the advanced control system utilizing digital communication between all the components of the system for overall system control. The test procedure specified in 10 CFR 430.23(m) is for matched assemblies and does not address testing for substantially unbalanced systems.

For these reasons, the existing test procedures would evaluate "VRV-II-S" in a manner so unrepresentative of its true energy consumption as to result in materially inaccurate competitive data.

It was only recently that variable refrigerant volume systems were introduced into the United States market. Previous and current test procedures have not been developed for these products that would reflect their real energy consumption and their extraordinary efficiency as of this date. But, without a waiver of the test procedures for variable refrigerant volume systems like "VRV-II-S," we will be at a competitive disadvantage in the market and consumers will be deprived of using this remarkably efficient technology.

In accordance with 42 U.S.C. 6293(c) and 42 U.S.C. 6314(d) of EPCA if there is an acceptable test procedure for a covered product, the manufacturer is prohibited from making representations about the energy

consumption of its equipment unless the equipment has been tested in accordance with such test procedures and the representation fairly discloses the result of the testing. Therefore Daikin is at a disadvantage in our ability to provide information on energy consumption of the "VRV-II-S" to our customers.

#### IV. Identification of the Basic Models

Daikin seeks a waiver from the test procedures for "VRV-II-S," variable refrigerant volume multi-split heat pump systems, listed below:

##### *Outdoor unit, Heat Pump type*

- RXYM4MVMT; 38,200 BTU/h cooling/42,600 BTU/h heating, single phase, 220 Volts, 60 Hz
- RXYM5MVMT; 47,700 BTU/h cooling/54,600 BTU/h heating, single phase, 220 Volts, 60 Hz
- RXYM6MVMT; 52,900 BTU/h cooling/61,400 BTU/h heating, single phase, 220 Volts, 60 Hz

##### *Indoor units*

- FXC series, Ceiling mounted cassette (double flow) type, FXC 20/25/32/40/50/63/80/125
- FXF series, Ceiling mounted cassette (multi flow) type, FXF 25/32/40/50/63/80/100/125
- FXK series, Ceiling mounted cassette (corner) type, FXK 25/32/40/63
- FXD series, Slim above ceiling mounted ducted type, FXD 20/25/32/40/50/63
- FXYD series, Low silhouette above ceiling mounted ducted type, FXYD 20/25/32/40/50/63
- FXS series, Built-in above ceiling mounted ducted type, FXS 20/25/32/40/50/63/80/100/125
- FXM series, Above ceiling mounted ducted type, FXM 40/50/63/80/100/125
- FXH series, Ceiling suspended type, FXH 32/63/100
- FXA series, Wall mounted type, FXA 20/25/32/40/50/63
- FXL series, Floor standing console type, FXL 20/25/32/40/50/63
- FXN series, Floor standing concealed type, FXN 20/25/32/40/50/63

Note: All the above series have engineering differences among the series.

#### IV. Identification of the Manufacturers of All Other Basic Models

At the present time Variable refrigerant volume (flow) multi-split air conditioning and heat pumps are proposed in the United States by Mitsubishi Electric and Electronics USA Inc., Samsung Electronic Company, Ltd. and Fujitsu General Limited, the first two companies apply most of their products to commercial and industrial use; Fujitsu's "Airstage" system is applied in residential and commercial use. (Fujitsu filed FR Doc. 05-2184 on 2-3-05 for a waiver for a similar product)

#### V. Alternate Test Procedures

There are no alternative test procedures available within the United States that provide a means to test and to rate the performance of such variable speed, multi-split, multi-zone product types. The

Engineering Committee of ARI's Ductless Section is actively working to evaluate and develop possible methods to provide testing and rating of such systems. Daikin is involved in this project in an effort to speed the process.

#### VI. Manufacturers of Similar Models Incorporating the Same Design Characteristics

Manufacturers of similar product within the United States market are:

- Samsung Electronics Co., Ltd.
- Sanyo Fisher (USA) Corp.
- Mitsubishi Electric & Electronics USA, Inc.
- Fujitsu General America
- LG Electronics USA, Inc.

#### VII. Application for Interim Waiver

Under the direction of 10 CFR 431.29, Daikin U.S. Corporation also submits this document as an Application for Interim Waiver of Test Procedures applicable to the VRV-II-S models as listed previously. Such approval of Interim Waiver will provide Daikin with an opportunity to compete in the market during which time DOE reviews our Petition for Waiver of Test Procedure for the VRV-II-S product.

Daikin U.S. believes that there is a high likelihood of success that our Petition for Waiver will be approved based on the grounds that DOE has issued a Waiver from Test Standards for product that is very similar in design and operation to that of the VRV-II-S product. Such approvals are evidenced as follows:

- DOE has issued a Waiver from Test Standards for product of very similar characteristics:
  - City Multi product marketed by Mitsubishi Electric & Electronics USA, Inc., as approved in the **Federal Register**/Vol. 69, No. 166/Friday, August 27, 2004/Notices, page 52,660.
  - DOE has issued an Interim Waiver from Test procedures to Samsung on February 28, 2005.
  - Testing laboratories cannot test products with so many indoor units.
  - There are too many possible combinations of indoor and outdoor units to test.

Failure to approve such Interim Waiver from Test Procedure will inhibit Daikin's ability to compete in the marketplace even though our VRV-II-S product has the same basic design characteristics as that of other manufacturers currently under waiver. The VRV-II-S models, for which this Interim Waiver is requested, comprise a significant portion of our total product offering. An inability to market such products would result in an economic hardship due to lost revenue and breadth of product offering available to attract customers.

#### VIII. Conclusion

Daikin seeks a waiver of current test procedures established in 10 CFR 430.23(m) Central Air Conditioners and Heat Pumps (including the new version published in the **Federal Register** dated October 11, 2005 [Docket No. EE-RM/TP-97-440] RIN 1904-AA46) and 10 CFR 430.27 Appendix M to Subpart B Uniform Test Method for

Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps for Residential Uses and ARI 210/240 (1989), ARI 210/240 (1994) and ARI 210/240 (2003) for commercial uses.

This is necessary because the test procedures in use and approved evaluate the basic models in a manner that is not representative of the true energy consumption characteristics of the "VRV-II-S." Using such test methods as those outlined in ARI 210/240 will result in materially inaccurate competitive data.

As ruled in the **Federal Register** (page 52,660, Vol. 69, no. 166/Friday, August 27, 2004/Notices) DOE has previously concluded that the testing of product with the same design characteristics of Daikin's VRV-II-S product is not feasible under currently established test methods as a result of:

- "Test laboratories cannot test products with so many indoor units"
- "And there are too many possible combinations of indoor and outdoor units to test."

Daikin U.S. Corporation respectfully asks the Department of Energy to recognize the technologies incorporated into this advanced heating and cooling product and allow us to market such product by granting our request for waiver. Daikin will work with stakeholders, U.S. Department of Energy, Air Conditioning and Refrigeration Institute, the American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc. and others, through the process of developing test procedures suitable for products using variable refrigerant volume (flow) systems.

Failure to receive such waiver or exemption from test standards would prevent Daikin U.S. from marketing our products even though DOE has previously granted waiver for other products currently in the market with similar design characteristics.

We would be pleased to respond to any questions you may have regarding this Petition for Waiver of Test Procedure. Please direct such questions or comments to Raul Esparza, Vice President of Latin American Operations at 305-596-4344 or by email at [raul.esparza@daikinac.com](mailto:raul.esparza@daikinac.com).

Sincerely,  
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